ROCKY FLATS PLANT, WATER TREATMENT PLANT
(Building 124)
West of Third St., north of Cedar Ave.
Golden vicinity
Jefferson County
Colorado

HAER No. CO-83-AC

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
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Washington, DC 20240

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ROCKY FLATS PLANT,
WATER TREATMENT PLANT HAER No. CO-83-AC
(Rocky Flats Plant, Building 124)

Location: Rocky Flats Environmental Technology Site, Highway 93, Golden, Jefferson County, Colorado. Building 124 is located in the northwest quadrant of the Rocky Flats Plant (Plant), west of Third Street, north of Cedar Avenue.

Significance: This building is a secondary contributor to the Rocky Flats Plant historic district, associated with the United States strategy of nuclear military deterrence during the Cold War, a strategy considered of major importance in preventing Soviet nuclear attack. Building 124 was built in 1952, and has treated, stored, and distributed all Plant water since 1953. The water system was designed to meet all existing and future Plant needs and will remain in production until the Plant is completely closed.

Description: Building 124, the Water Treatment Plant, has a concrete foundation and walls, and metal, shallow-pitched gable roofs. It encompasses approximately 4,250 square feet in a roughly rectangular shape. The windows are industrial, multi-pane with metal sash. The doors are metal.

Raw water is purchased from the City and County of Denver and is drawn from two Denver-owned sources, Ralston Reservoir and the South Boulder Diversion Canal. Water from these two sources is typically pumped to a raw water storage pond on the west side of the Plant before entering the water treatment system.

Building 124 has a nominal treatment capacity of 700 gallons per minute (gpm). It is comprised of a flocculation tank, gravity-sand filters, chemical feeders, chlorination equipment, distribution pumps, and facilities for recycling backwash water. Alum, lime, and chlorine are added to the water as it flows into a coagulation and clarification basin. After clarification, the water flows through rapid-sand filters and is chlorinated prior to entering the finished water storage system. Blowdown water from the clarifier and backwash water from the microstrainer and filters is processed through settling basins for removal of solids. The clarified water from this operation is pumped back into the raw water system while the solids are pumped to drying beds and then are taken to the landfill. Treated water flows from Building 124 to a clear well. From there it is pumped into a ground-level tank (Building 215B) and then either into an elevated tank (Building 215A) or the Plant distribution mains, according to demand. Potable water is distributed for domestic, process, and fire protection uses throughout the Plant site.

Pumping capability for the treated water at Building 124 relies upon five electric pumps. A 1,000-gpm pump moves treated water from the clear well to the ground-level tank, which has a capacity of 500,000 gallons. One 700-gpm and two 500-gpm pumps deliver water from the clear well or the ground-level tank to either the elevated tank or the Plant treated water distribution

system. These three distribution pumps cycle automatically to maintain a minimum of 220,000 gallons in the 300,000-gallon capacity, 155-foot-high storage tank. Normally, only two of these three pumps are on line at one time. A fifth pump can pump water from either the clear well or the ground-level tank to the distribution system at 1,500 gpm in the case of fire or emergency. In case of a power outage, there is a 225-kilowatt emergency generator to keep the pumps operational.

Filter backwash water from Building 124 is reprocessed in a facility that has two 60,000-gallon storage tanks, two drying beds, and several pumps. This facility permits reuse of this highly turbid water, eliminating its discharge off site.

An alarm system, dedicated to the Water Treatment Plant, is maintained in Building 124. Alarms sound when water levels in the tanks are too low or too high, when flow to the distribution system is excessive, or when various operations in the backwash cycle malfunction.

Near Building 124 there is a connection whereby, in an extreme emergency, the incoming raw water main can be connected directly to the treated water distribution main, bypassing all storage tanks and the treatment plant. To make this change, it is necessary to manipulate valves and physically rebolt a flange.

History: Construction of Building 124 began in 1952. The complete Plant water supply, treatment, storage, and distribution system went into production in 1953 and has operated, uninterrupted, since that time. Until the system was operational, water was brought to the Plant from Boulder in tank trucks. The water system was designed to meet all existing and future Plant needs and will remain in production until the Plant goes out of operation.

Sources: United States Department of Energy. *Site Safety Analysis Report, Notebook 11-Security*, by EG&G Rocky Flats, Inc. Rocky Flats Repository. Golden, Colorado, 1994.

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Historians: D. Jayne Aaron, Environmental Designer, engineering-environmental Management, Inc. (e^2M), 1997. Judith Berryman, Ph.D., Archaeologist, e^2M, 1997.